

AMENDMENT TO THE CLAIMS

The following claim listing replaces all prior listings and versions of the claims:

LISTING OF CLAIMS

1. (Currently Amended) A phosphor element comprising:

an electron hole injection electrode and an electron injection electrode disposed opposite to each other;

an electron hole transport layer, a phosphor layer, and an electron transport layer stacked in this order from the side of the electron hole injection electrode toward the side of the electron injection electrode, wherein the stacked layers are sandwiched between the electron hole injection electrode and the electron injection electrode, and wherein:

the phosphor layer includes an inorganic phosphor layer in which at least one part of a surface of the inorganic phosphor layer is covered with an organic material which is a conductive organic material, and wherein the inorganic phosphor layer emits directly in response to applied electric field between the electron hole injection electrode and the electron injection electrode,

the inorganic phosphor layer comprises a fluorescent substance including a semiconductor host crystal, [[and]]

the semiconductor host crystal includes an oxide or a composite oxide including at least one kind of element selected from a group of Zn, Ga, In, Sn and Ti, and

the organic material is chemically adsorbed to at least one part of the surface of the inorganic phosphor layer.
2. (Cancelled)

3. (Previously Presented) The phosphor element according to claim 1, further comprising first and second substrates disposed opposite to each other in which at least one of the first and second substrates is transparent or semi-transparent,

wherein the electron hole injection electrode, the electron hole transport layer, the phosphor layer, the electron transport layer, and the electron injection electrode are sandwiched in this order between the first and second substrates.

4-5. (Cancelled)

6. (Original) The phosphor element according to claim 5, wherein the organic material is a conductive organic material having an electron hole transporting property and chemically adsorbed to the surface of the inorganic phosphor layer disposed opposite to the electron hole transport layer.

7. (Original) The phosphor element according to claim 5, wherein the organic material is a conductive organic material having an electron transporting property and chemically adsorbed to the surface of the inorganic phosphor layer disposed opposite to the electron transport layer.

8. (Original) The phosphor element according to claim 5, wherein the organic material includes a conductive organic material having an electron hole transporting property and a conductive organic material having an electron transporting property,

wherein the conductive organic material having the electron hole transporting property is chemically adsorbed to the surface of the inorganic phosphor layer disposed opposite to the electron hole transport layer,

wherein the conductive organic material having the electron transporting property is chemically adsorbed to the surface of the inorganic phosphor layer disposed opposite to the electron transport layer.

9. (Currently Amended) A phosphor element comprising:

an electron hole injection electrode and an electron injection electrode disposed opposite to each other;

an electron hole transport layer, a phosphor layer, and an electron transport layer stacked in this order from the side of the electron hole injection electrode toward the side of the electron injection electrode, wherein the stacked layers are sandwiched between the electron hole injection electrode and the electron injection electrode, and wherein:

the phosphor layer includes only an inorganic phosphor particle in which an entire at least one part of a surface of the inorganic phosphor particle is covered with an organic material which is a conductive organic material, the organic material being chemically absorbed to the surface of the inorganic particle,

the inorganic phosphor particle emits directly in response to applied electric field between the electron hole injection electrode and the electron injection electrode,

the inorganic phosphor particle comprises a fluorescent substance including a semiconductor host crystal, and

the semiconductor host crystal includes an oxide or a composite oxide including at least one kind of element selected from a group of Zn, Ga, In, Sn and Ti.

10. (Previously Presented) The phosphor element according to claim 9, further comprising first and second substrates disposed opposite to each other in which at least one of the first and second substrates is transparent or semi-transparent,

wherein the electron hole injection electrode, the electron hole transport layer, the phosphor layer, the electron transport layer, and the electron injection electrode are sandwiched in this order between the first and second substrates.

11-12. (Cancelled)

13. (Original) The phosphor element according to claim 12, wherein the organic material is a conductive organic material having an electron hole transporting property and an electron transporting property.

14. (Original) The phosphor element according to claim 12, wherein the organic material includes a conductive organic material having an electron hole transporting property and a conductive organic material having an electron transporting property.

15. (Cancelled)

16. (Previously Presented) The phosphor element according to claim 1, further comprising an electron hole injection layer sandwiched between the electron hole injection electrode and the electron hole transport layer.

17. (Previously Presented) The phosphor element according to claim 1, further comprising an electron injection layer sandwiched between the electron injection electrode and the electron transport layer.

18. (Previously Presented) The phosphor element according to claim 1, further comprising an electron hole block layer sandwiched between the phosphor layer and the electron transport layer.

19. (Previously Presented) The phosphor element according to claim 1, further comprising a thin film transistor connected to the electron hole injection electrode.

20. (Previously Presented) The phosphor element according to claim 1, further comprising a thin film transistor connected to the electron injection electrode.

21. (Previously Presented) The phosphor element according to claim 19, wherein the thin film transistor is an organic thin film transistor including a thin film formed of an organic material.

22. (Cancelled)

23. (Currently Amended) A display device comprising:

a phosphor element array in which plurality of phosphor elements are arranged two dimensionally, each phosphor element comprising:

an electron hole injection electrode and an electron injection electrode disposed opposite to each other;

an electron hole transport layer, a phosphor layer, and an electron transport layer stacked in this order from the side of the electron hole injection electrode toward the side of the electron injection electrode, wherein the stacked layers are sandwiched between the electron hole injection electrode and the electron injection electrode, and wherein the phosphor layer includes an inorganic phosphor layer in which at least one part of a surface of the inorganic phosphor layer is covered with an organic material which is a conductive organic material, and the inorganic phosphor layer emits directly in response to applied electric field between the electron hole injection electrode and the electron injection electrode; and

a thin film transistor connected to the electron hole injection electrode;

a plurality of x electrodes extending parallel to each other in a first direction parallel to a surface of the phosphor element array; and

a plurality of y electrodes extending parallel to each other in a second direction which is parallel to a surface of the phosphor element array and perpendicular to the first direction,

wherein:

the thin film transistor of the phosphor element array is connected to the x electrode and the y electrode

the inorganic phosphor layer comprises a fluorescent substance including a semiconductor host crystal, [[and]]

the semiconductor host crystal includes an oxide or a composite oxide including at least one kind of element selected from a group of Zn, Ga, In, Sn and Ti, and

the organic material is chemically absorbed to at least one part of the surface of the inorganic phosphor layer.

24. (Previously Presented) The phosphor element according to claim 1, wherein the organic material does not emit in response to applied electric field.

25. (Previously Presented) The phosphor element according to claim 9, wherein the organic material does not emit in response to applied electric field.

26. (Previously Presented) The display device element according to claim 23, wherein the organic material does not emit in response to applied electric field.